DOCUMENT RESUME

ED 189 411 CE 026 032

TITLE Competency Based Education Inservice for Part Time Community College Occupational Education Teachers. Objective Referenced Tests: Module #3.
INSTITUTION Washtenaw Community Coll., Ann Arbor, Mich.
SPONS AGENCY Michigan State Dept. of Education, Lansing. Vocational-Technical Education Service.
NOTE 79p.: Parts of this document will not reproduce well due to light type. For related documents see CE 026 030-034. Prepared in collaboration with Rande, Ltd., Research and Development in Education.

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Behavioral Objectives; Community Colleges; *Competency Based Education; Competency Based Teacher Education; *Criterion Referenced Tests; *Inservice Teacher Education; Learning Activities; Learning Modules; Part Time Faculty; *Student Evaluation; Teacher Developed Materials; *Test Construction; Tests; Two Year Colleges; *Vocational Education

ABSTRACT

This self-instructional, self-paced module is the third of five in the series, Competency Based Education Inservice for Part Time Community College Occupational Education Teachers. (See note for other modules.) Its purpose is to enable the teacher to write objective-referenced test items and to use them to help assess students' abilities. Contents include these sequential elements: introductory material, including performance and enabling objectives and background information (such as time duration); exemption, prerequisite skills, and exit tests; a series of learning experiences corresponding to enabling objectives with a test and feedback section for each experience; and a community college applications section. This final section provides examples of the concept in this module applied to a variety of Community College Occupational Programs and discusses special considerations for community college instructors. A glossary is appended (YLB)

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7-8-80

OBJECTIVE-REFERENCED TESTS
MODULE #3

SELF INSTRUCTION MATERIALS

COMMUNITY COLLEGE TEACHERS

PROJECT TITLE:

COMPETENCY BASED EDUCATION INSERVICE FOR PART TIME COMMUNITY COLLEGE OCCUPATIONAL EDUCATION TEACHERS

PROJECT NUMBER:

3256 - 7197

ED189411

This project will orientate part-time community college teachers to the mission, nature, and purpose of Michigan Community College Occupational Technical Education, and the use of Competency Based Education.

This project was developed by Washtenaw Community College, Ann Arbor, Michigan in cooperation with Rande Ltd., Research and Development in Education, consultants responsible for adapting Michigan Department of Education CBE III materials for this project.

FUNDED BY: THE MICHIGAN DEPARTMENT OF EDUCATION

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CBE 3

PREFACE

The materials you are about to study is one of six modules in an instructional sequence for community college instructors. They are:

0. Orientation to Michigan Community Colleges
1. Program Goals or Competencies
2. Performance Objectives
3. Objective-Referenced Testing
4. Selecting Learning Activities
5. Follow-up and Evaluation

Each module can be covered as a unit. For comprehensive knowledge of the elements of competency-based education, as it applies to the community college, all six modules should be completed. These instructional modules and their supporting materials have been designed to allow you to work at your own pace in a location of your choice.

Each module contains the sequential elements which have been color coded to highlight each component:

1. Introductory Material.....Yellow
   (including Performance Objectives)
2. Tests (Exemption, Prerequisite Skills, and Exit Tests).....Green
3. A Series of Learning Experiences.....White
   (with a test and feedback section for each experience)
4. Appendices.....Blue
5. Community College Application.....Pink

Therefore, you will notice that only the white pages contain the information and exercises you will need to complete to learn each knowledge, skill, or judgment. The remaining pages are provided for your individual use and information as you work through the module.

The examples provided in this module relate to a variety of educational settings. However, you will find that the pink Community College Application section provides examples of the concept in this module applied to a variety of Community College Occupational Programs. Futhermore, this application section includes a discussion of special considerations for community college instructors.

> Read the beginning of the pink section before starting the module; then read the second part of the pink section after completing the module. In this way the Community College Application section should help you develop a CBE framework for your area of specialization.

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I. INTRODUCTION

Before you skip over this entire module because you have visions of a research approach to evaluation and measurement, standard deviations, and a "z" or two--STOP! We are going to take a look at testing and measurement of learning in a manner which you can master without statistical skills. There may be some new terms to master, for each profession has its jargon. But, the important thing to realize as we take a look at objective-referenced testing (ORT) is that many of us may already be doing something like it - at least conceptually!

Rather than starting from scratch as if testing was something brand new to you, we'll start with what you have learned about performance objectives and the principles of Competency-Based Education.

In this module you will learn how to write objective-referenced test items and then how to use them to help you assess your students' abilities.

II. PERFORMANCE OBJECTIVES

Terminal Performance Objective #1

Given five terminal performance objectives for a course (or grade level) in your area of specialization, you will write an objective-referenced test or item for each. Each ORT will contain the following components:

(a) Directions to the Student
(b) Student Response
(c) Directions to the Evaluator
(d) Evaluator's Response

In addition, each test item must:

(a) test the intent of the matching performance objective
(b) be worded to facilitate student comprehension

Terminal Performance Objective #2

Given a CBE design for a course or grade level in your area of specialization, you will describe a grading system which:

(a) is compatible with the constraints of your school setting, and,
(b) reflects the basic principles of CBE.

Enabling Objectives

1. You will correctly identify the characteristics of objective-referenced tests.

2. You will correctly identify the uses of objective-referenced testing in a CBE program.

3. Given a performance objective and a matching ORT with a missing or incorrect component, you will test the intent of the performance objective.

4. Given class characteristics and a performance objective, you will construct an ORT which meets the criteria specified in Terminal Performance Objective #1.

III. BACKGROUND INFORMATION

A. This instructional module should help you achieve the following program goals:*

1. DEVELOP A VARIETY OF TEST ITEMS THAT ARE VALID AND RELIABLE.

2. EVALUATE STUDENT PROGRESS AND INFORM EACH STUDENT OF HIS/HER PROGRESS.

3. TREAT ALL STUDENTS FAIRLY.

B. This module should take approximately three hours to complete. This estimated time may help you to pace yourself.

C. Many informative articles and books are available on objective-referenced testing. A sample list appears below.

Bernabei, Raymond and Sam Liles, Behavioral Objectives in Curriculum and Evaluation. (Dubuque, Iowa: Kendall/Hunt Publishing Co., 1970).

Mager, Robert F., Measuring Instructional Intent. (Belmont, California: Fearon Publishers, 1973).

Mager, Robert F. and Kenneth M. Beach, Jr., Developing Vocational Instruction. (Belmont, California: Fearon Publishers).

Michigan Department of Education, Developing Performance Objectives

You may wish to explore these later, but no outside reading is necessary for the successful completion of this module.

---

*These program goals were developed by the teachers who participated in the Michigan COAST Project 1974-75. This was a statewide effort to design a model competency-based teacher education program for all secondary teachers. This project was led by Wayne State University and Ferris State College.

D. You will need to gather these materials before you start to work on this module:

1. The performance objectives you have written as a result of completing Module #2 in this series

OR

2. Another set of performance objectives for a class you will be teaching.

IV. EXEMPTION TEST

A. Rationale

A basic concept of competency-based education is to provide instruction to meet the needs and abilities of each individual student. A first step is to determine whether the student, you in this instance, needs this instruction or if you already have the knowledge, skills, or judgments in question. So, you're now being asked to take an Exemption Test. In general, an Exemption Test is administered to assess achievement of course performance objectives. It is administered before instruction; passage exempts the learner from that instruction.

This test will not affect your class standing, but it helps you in two ways:

1. The Exemption Test covers the learning on the Exit Test. So, you get to take the test in advance.

2. By succeeding on the Exemption Test, you may bypass portions, or all, of the instruction. Then, you can spend your time on other parts of the program.

Module 3 - Objective Referenced Testing

EXEMPTION TEST RESPONSE SHEET

Student's Name: _____

DIRECTIONS:

1. The Exemption Test assesses achievement of this module's performance objectives. It is administered before instruction; passage exempts the learner from that instruction.

2. Use this test <u>before</u> working through the module.

3. Do not write on, or use, this section after you have read the module or completed the learning experiences.

Enabling Objective #1

↓

1. Read the statement below and mark those statements "true" which describe the characteristics of objective-referenced testing. Mark the others "false."

   _____ a. Teachers usually teach an instructional unit and then write ORT's.

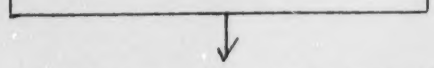
   _____ b. Teachers do not need to administer and grade all objective-referenced tests to the entire class before assessing an individual's response.

   _____ c. If a student wanted to "get by" in a class with an easy teacher, the student would pick a teacher that uses objective-referenced tests rather than one that used norm-referenced tests.

   _____ d. Teachers monitor their objective-referenced test items to make sure that students do not study the tests in advance.

_____ e. ORT's are always written as paper and pencil test items.

Enabling Objective #2



2. Read the situations below and check those which can describe the use of objective-referenced testing in a CBE program.

_____ a. Case description: Each year the seventh grade students take a general achievement test, measuring skills in reading, mathematics, science.

_____ b. Case description: You are teaching industrial arts with an emphasis on woodworking techniques. Students have made model wooden boats for their competition, and you are giving them the last evaluation before they enter the contest.

_____ c. Case description: You are watching your students at the end of the day's activities. You have been stressing the need for putting the room back into a clean and orderly condition. Today you are not going to remind them about this. You're going to sit back and see if they've learned their lesson.

_____ d. Case description: You are teaching 10th grade English composition. The way you structure your class it is essential that students have mastered basic sentence structure in Jr. High. So you test the students to make sure they can do this.

_____ e. Case description: Your class is organized in the following manner: students work on activity 1, 2, and 3, then complete two activities from a list you have provided. Sometimes this involves some duplication of work for students that came from one elementary school in town.

Enabling Objective #3

Below you will find four performance objectives with matching ORT's. Analyze this data and correct the test item by either completing or revising it. Write your answers on another piece of paper.

1. Performance Objective #1

   Given a list of selected inventors, the student will correctly match them with the appropriate inventions.

   ORT #1

   Directions to the student:

   Match the name of the inventor with the invention by writing the invention letter in the space provided.

____	1. John Guttenberg	a.	telephone
____	2. Samuel Morse	b.	phonograph
____	3. Alexander Graham Bell	c.	automobile
____	4. Guglielmo Marconi	d.	printing press
____	5. Thomas Edison	e.	wireless telegraph
		f.	radio

2. Performance Objective #2

   Given necessary equipment, the student will perform riveting with 70% completed according to FAA standards.

   ORT #2

   Given a rivet and a series of alloys, the student will select the correct material and complete the rivet length required for metal thickness, compute the finished dimensions of a correctly-driven rivet and compute the minimum rivet spacing and edge distance. The student will then drill the hole and fasten 10 rivets based upon his computations. 7 of the 10 rivets will meet the computed dimensions and have heads and tails free of defects.

3. Performance Objective #3

The learner will correctly associate picture clues with selected words.

ORT #3

Directions (give orally):

1. Name the picture
2. Match the picture with the right word
3. Draw a line from the picture to the right words

____ P ____ NP

4. Performance Objective #4

Given a selected item, the student will prepare a full page advertisement, using the six major parts of an ad, and following the guidelines provided.

ORT #4

Directions to Student:

Using the following information, construct a full page ad on the paper provided. Be sure to include the following parts: Headline, Border, Copy, Illustration, Logotype, and White Space. Check spelling and grammar. You may use a cut-out for the illustration. Time: 1 Hour.

Handout to Student:

Product 10-speed bike - Price $79.99 - Variety of colors - Purchased at Harry's Bike Shop - Location: 17991 Livernois - Guarantee - All extras.

Directions to the Evaluator:

Judging the ad, use the following checklist:

		YES	NO
1.	Copy clear and concise	___	___
2.	Complete description of product	___	___
3.	Illustration appropriate	___	___
4.	Proper placement of ad	___	___
5.	Shows originality	___	___
6.	Grammatically correct	___	___
7.	Saleability of ad	___	___

Enabling Objective #4

↓

Read the following student characteristics and the performance objective. Then construct an objective-referenced test item to match the objective which would be appropriate for these students.

Student Characteristics

14-year old students in a ninth grade general math course
Reading level ranges from grades 6-10
Many do not have a large vocabulary
Students have had practice following directions on their own

Performance Objective

Given a blank check and information needed to fill out the check, the student will write out the check according to the guidelines supplied in class.

ORT:

Terminal Performance Objective #1

Examine the performance objectives written for Module #2 (or another comparable set for a course you teach). Select five objectives, making sure at least part of them are performance items, where students make a product or demonstrate a skill.

On separate pieces of paper:

1. List the pertinent characteristics of your class--course name, grade level, age, reading level, other relevant information.
2. Write the performance objective.
3. Write the ORT beneath its matching performance objective.

Terminal Performance Objective #2

On another piece of paper write a handout appropriate for distribution to your class which describes how grades will be assigned. Make clear exactly:

(a) what grades can be given (For example, can you give incompletes?)

(b) the basis for getting each grade

(c) school rules, if any, which are influencing your grading plan

(d) provisions, if any, for "making up a grade"

To evaluate yourself on the Exemption Test, turn to the check list that follows.

Feedback

Use the following answers to evaluate yourself. Go over each item in the list and see if all of your responses were correct.

Enabling Objective #1

False a. ORT's are written and made public prior to instruction.

True b. Individuals are not compared to other students to determine if they have passed. Therefore, one person can be tested and graded at a time.

False c. It is possible to pass with a lower score on a test graded with a curve. With objective-referenced testing all students must meet the pre-specified standards.

False d. ORT's are public documents.

False e. ORT's can take any form--actual demonstrations, product development, or pencil and paper.

Were you correct? _____ YES _____ NO

Enabling Objective #2

_____ a. No, this is a norm-referenced testing situation.

✓ b. Yes, this could be an example of an objective-referenced exit test.

✓ c. Yes, again this is an exit test but relates to the affective domain.

✓ d. Here is a prerequisite skills testing situation using ORT's.

_____ e. This is not an example of objective-referenced testing. If it were, an exemption test would be given and students would not have to duplicate work.

Were you correct? _____ YES _____ NO

Feedback

Enabling Objective #3

1. ORT Analysis

This item is missing two components--Directions to the Evaluator and Evaluator's Response Space.

ORT Correction

The following (or an equivalent) should be added to the item:

Directions to the Evaluator:

Check to see if the following answers are provided:

d 1.

e 2.

a 3.

f 4.

b 5.

All five must be correct to pass.

_____ Pass _____ No Pass

2. ORT Analysis

The format is incorrect.

ORT Correction

Directions to the Student:

You should have the following materials in front of you:

a. a rivet head, and
b. 3 different types of alloys

If you are missing something, see your instructor.

First, make the following computations:

a. determine the finished dimensions of a correctly-driven rivet
b. determine the minimum rivet spacing
c. determine the minimum edge distance

Write your answers in the space provided. Next, actually install the rivets based upon your computations.

Feedback

Student Response

1. I have chosen this alloy: _____.

2. The finished dimensions of a correctly-driven rivet are: _____.

3. The minimum rivet spacing is _____.

4. The minimum edge distance is _____.

Directions to the Evaluator:

Evaluate both the computations and the final product based upon the guidelines below:

	YES	NO
1. Are the computations correct?		
(a) finished dimensions?	___	___
(b) rivet spacing?	___	___
(c) edge distance?	___	___
2. Do 70% of the installed rivets meet the above dimensions?	___	___
(a) How many rivets are there? _____		
(b) How many are correct? _____		
3. Are 70% of the installed rivets free of defects in the heads and tails?	___	___
How many are correct? _____		

Comments:

All "yes's" must be checked to pass. _____ Pass _____ No Pass

Feedback

3. ORT Analysis: This item is correct.

An answer sheet technically could be provided, but the answers are so obvious it hardly seems necessary.

4. ORT Analysis: "Directions to the Student" do not match the intent of the performance objective. There are additional criteria included in these directions--spelling, grammar, and time. Also there is no Evaluator Response Space, and the Checklist does not include reference to the 6 parts of an ad being included.

ORT Correction: Delete the reference to spelling, grammar, and time. OR change the performance objective.

Add to "Directions to the Evaluator":

	YES	NO
8. Were the six components included?		
a. headline	___	___
b. border	___	___
c. copy	___	___
d. illustration	___	___
e. logotype	___	___
f. white space	___	___

All items must be checked "yes" to pass.

Pass _____ No Pass _____

Feedback

Enabling Objective #4

Use the following guidelines to check your ORT.

CRITERIA	YES	NO	NA
Format: Does the item include:			
1. Directions to the Students?	___	___	___
2. Student Response Space?	___	___	___
3. Directions to the Evaluator?	___	___	___
4. Evaluator Response Sheet?	___	___	___
5. Do the "Directions to the Students" accurately reflect the intent of the performance objective?	___	___	___
6. Do the "Directions to the Evaluator" accurately reflect the intent of the performance objective?	___	___	___
7. Is the test item written in a manner appropriate for the types of students in the class?	___	___	___

Feedback

Terminal Performance Objective #1

Each of the ORT's will be evaluated according to the following criteria:

CRITERIA	1	2	3	4	5
Format: Does the item include:					
1. Directions to the Students?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
2. Student Response Space?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
3. Directions to the Evaluator?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
4. Evaluator Response Sheet?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
5. Do the "Directions to the Students" accurately reflect the intent of the performance objective?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
6. Do the "Directions to the Evaluator" accurately reflect the intent of the performance objective?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
7. Is the test item written in a manner appropriate for the types of students in the class?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA

Feedback

Terminal Performance Objective #2

Use the following guidelines to check your paper explaining grading systems.

Does your explanation include:

	YES	NO	NA
1. Which grades you will be assigning to students?	___	___	___
2. The basis for each grade?	___	___	___
3. The relationship between the grades and the performance objectives?	___	___	___
4. The relationship between the grades and the objective-referenced test items?	___	___	___
5. Provisions, if any, for "making up a grade"?	___	___	___
6. The relationship, if any, between the grades and any school rules?	___	___	___

Comments:

All "YES'S or NOT APPLICABLES" must be checked.

Each part of this Exemption Test was related to an objective. If you mastered any part, you will be exempted from that portion of the learning experience. If you have a perfect score on the entire test, you are completely exempted for you already have the skills and knowledge presented in this module. If you did not do well, it will be necessary for you to complete the module. If you have any questions or need more information, see an instructor if one is available. If an instructor is not available, go to an expert in your school system for help.

V. PREREQUISITE SKILLS TEST

A. Rationale

Many things learned in a program are based upon knowledge of skills previously learned; and unless a student remembers everything, he may have trouble with the new instruction. So, the next step is to take the Prerequisite Skills Test. It tests for skills and competencies upon which the instructional program is based but which are not directly taught in the course, hence they are prerequisite.

B. The Test

For each of the following objectives, draw a circle around the conditions, one line under the performance, and two lines under the criteria.

1. Given one side of a proposition, the student will identify specific evidence for that side of the argument. Appropriate evidence will:

   a. contain the four major types
   b. pass the tests of evidence
   c. convince 75% of the class

2. The student will take new matter dictation which is presented at 80 wpm for 3 minutes and transcribe the notes on the typewriter within 20 minutes with 90% accuracy.

3. The student will fill out four blank checks using the check entries provided according to the example given in class.

4. Given a series of COBOL statements and definitions of functions, the learner will match the same with 90% accuracy.

5. Given a stethoscope, the learner will locate the apex of the heart and count the heart rate within 2-4 beats accuracy.

C. Feedback

1. Given one side of a proposition, the student will identify specific evidence for that side of the argument. Appropriate evidence will:
   a. contain the four major types
   b. pass the tests of evidence
   c. convince 75% of the class
2. The student will take new matter dictation which is presented at 80 wpm for 3 minutes, and transcribe the notes on the typewriter within 20 minutes with 97% accuracy.
3. The student wil fill out 4 blank checks using the check entries provided according to the example given in class.
4. Given a series of COBOL statements and definition of functions, the learner will match the same with 80% accuracy.
5. Given a stethoscope, the learner will locate the apex of the heart and count the heart rate within 2-4 beats accuracy.

VI. LEARNING EXPERIENCE

Enabling Objective #1

You will correctly identify the characteristics of objective-referenced tests.

Characteristics of ORT's

Objective-referenced testing means measuring learner performance as described in a performance objective and evaluating the learner as indicated in that same objective. We may test learners and evaluate them against an objective any time we choose: the first day of class, frequently along the way, or just as they depart to go on to bigger and better learning. In each case, however, our testing can be objective-referenced; that is, measuring what an objective specifies.

This is a radical departure from the traditional type of testing--norm-referenced testing. In objective-referenced testing, the learner's performance is compared to the stated performance objective. In norm-referenced testing, learner performance is compared to the performance of the group--not to a performance objective. It is possible to receive a poor evaluation when compared against a performance objective but to do very well when compared to a group which has not done well.

These two types of testing are not incompatible, but they have two different ends in mind. Objective-referenced testing wants to see how the learner is doing on mastering an objective. Norm-referenced testing wants to compare an individual learner's performance to the performance of

the group (or norms). While there may be considerable need and use for norm-referenced testing (70=C=Average, etc.), competency-based education and the use of performance objectives to plan instruction clearly require an increased emphasis upon objective-referenced testing.

Furthermore, in competency-based programs the ORT's are written before instruction, as are the program goals and the performance objectives. Therefore, they, too, become public documents which further define the program for students, teachers, and parents. This adds to the desire for increased communication between the important parties that can influence the school.

This public nature leads to a much fairer system of assessing student performance than we typically find in the schools. Have you ever heard someone say "Well, I couldn't give her an "A" because she's too much of a troublemaker in class, so I gave her a "B."? This statement shows some conflicting pressures. Evidently the student knew her lesson, i.e., had met the content objectives, but other factors entered into the grading situation. Were these factors specified in advance or did the student discover this on report card day? Or, have you heard this one? "I gave him a "B" even though he got 98% on the final because I know this comes so hard for him." All of these situations demonstrate how we let other factors influence

the grading of students. With CBE and objective-referenced testing, all tests and grading systems are based upon performance objectives. The objectives, the testing and grading procedures are determined in advance and made public. Therefore, there is an inherent objectivity towards all students. Remember, in CBE programs students have the choice to retake the test until they pass.

Since ORT's are based upon the performance objectives, you can see that the test items can take many forms. They require as many types of performances as can be called for in an objective. They can be the traditional paper and pencil tests, such as short-answer questions, true-false, or multiple-choice items. Students can demonstrate a skill; they can simulate or actually participate in some real-life experience. All of these cases can be testing situations. And, ORT's can be constructed for all of these examples.

On the next page is the Response Sheet for Enabling Objective #1. Answer these questions to see if you can remember the key points presented thus far.

Response Sheet for Enabling Objective #1

Read the statements below and mark those statements "true" which describe the characteristics of objective-referenced testing. Mark the others "false."

_____ a. A teacher could send the ORT's home with students the first day of class.

_____ b. ORT's are always written as either performance items or true-false items, such as this one.

_____ c. In order to see if a student passes an ORT, the teacher must first grade all of the class's papers.

_____ d. Teachers usually write performance objectives, then ORT's.

_____ e. If a teacher were very hard, most students would rather that teacher used objective-referenced testing procedures than norm-referenced testing procedures.

Now turn the page to the Feedback section and check your answers.

Feedback

True a. ORT's are public documents.

False b. ORT's can take any form you can write an objective for.

False c. An individual student performance is compared to the standard in the performance objective. It doesn't matter what other students do.

True d. Since ORT's are based upon performance objectives, the objectives are usually written first.

True e. In norm-referenced testing only a few can get a good grade and the criteria are not known in advance. With ORT's everyone can pass if they try--even with the roughest of teachers.

If you had no errors, move on to the next section.

If you missed any of the above answers, go back and read this section of the module again.

Uses of ORT's

Enabling Objective #2

You will correctly identify the uses of objective-referenced testing in a CBE program.

Objective-referenced testing is used in many ways in a CBE program. Here, we will discuss three primary uses--in an exemption test, a prerequisite skills test, and an exit test.

At the beginning of a particular learning experience (course, unit, module, etc.), we give an exemption test to see if the students do, in fact, need that instruction (wholly or in part). This test measures each of the behaviors specified in the performance objectives for that instruction. Any student who passes an item is exempted from the work on that particular performance objective. In other words, they do not have to learn something which is already known.

If the learners cannot exempt themselves from the instruction, we then want to see if they have the prerequisite skills necessary to survive in our planned learning experience. If a learner can't pass the ORT on, say, long division, you know at least one thing: the instruction on long division is needed.

But, the test may have been failed because the student could not yet add, subtract, or multiply. These are the skills prerequisite to long division. When you test these

types of skills, you would use a prerequisite skills test. And this test is also objective-referenced. However, the objectives which match the items are usually from a previous unit of instruction.

When students have learned a given topic, we can measure the learning through an objective-referenced exit test or post-test. It is an exit test because if it is passed, the learner can exit from the learning experience. It is a post-test because it is given after instruction. These are two names for the same test. They measure for the achievement of the stated performance objectives.

In many cases, teachers use the exact same test for the exemption test and the exit test. In some instances, one may use different forms of the same test. But they are always objective-referenced.

While there are other instances in which ORT's are used in competency-based education, these are the three most important situations. Turn to the response sheet on the next page and see if you can identify the various cases in which ORT's are being used.

Response Sheet for Enabling Objective #2

Read the situations below and check those which could describe the use of objective-referenced testing in a CBE program.

____ a. Case description: You are watching your students at work during the class period. All semester you have been stressing the need for cooperation in order to complete group projects efficiently and effectively. Today you are not going to remind them about cooperation. You're going to sit back and see if they've learned their lesson.

____ b. Case description: A new student has been placed in your class. The rest of the group is in the middle of a unit. You take the new student aside and discuss what the unit is about and then ask him to complete two tests; one might be very hard and the next one might be very easy.

____ c. Case description: It's finally the end of the school year, and here you are giving the final exam.

____ d. Case description: You are teaching kindergarten and want to begin initial reading work. But first you give the class a standardized Reading Readiness Test.

____ e. Case description: It's spelling bee time again. Your students usually do very well and a few are always in the school finals. However, you always sort of resent the time it takes away from your regular instruction.

Now turn the page to the Feedback section and check your answers.

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Feedback

✓ A. Yes. This is an example of an objective-referenced exit test on an area of the affective domain.

✓ B. Yes, again. You'll be giving the student two ORT's. One is the exemption test for the unit. This is the hard one. Students are not expected to pass. And the second one is the prerequisite skills test. Hopefully this should be the easy test since students should have the skills.

✓ C. Yes, one more time. A final exam could be an exit test.

____ D. Either answer is correct actually. Usually standardized tests are not objective-referenced. But in this case the teacher could match up the times on the standardized test to prerequisite skill objectives and thus use the test in the same way one would use an ORT.

____ E. No, definitely. If the spelling bee is not related to the regular class objectives, then it is not objective-referenced. But note that the bee is a test of the students.

If you had no errors, move on to the next section of the module.

If you missed any of the above answers, go back and read this section of the module again.

ORT Components

Enabling Objective #3

Given a performance objective and a matching ORT with a missing or incorrect component part, you will revise the test item so that the ORT will test the intent of the performance objective.

Now, we will finally begin looking at some examples of ORT's and begin to find out how to write them.

An ORT generally has four key parts:

1. Directions to the Student
2. Student Response
3. Directions to the Evaluator
4. Evaluator Response

Does this look like a lot of stuff for one simple test item? Well, perhaps, but remember that most terminal performance objectives aren't so simple. We're often talking about complex behaviors. So there must be provisions for measuring the most complex performance as well as the most simple. Let's examine each part.

First is the "Directions to the Students." This part is in most any test item ever written. It's not unusual. Here are some sample student directions:

1. List the original 13 states.

2. On the repair table at the front of the class you will find a small electrical appliance with a malfunction. Locate the malfunction and repair or replace those parts necessary to return the appliance to normal operation.

3. You will solve the riddles below by putting their name on the line after the riddle. Then cut out the pictures and paste them beside the correct riddle.

Where do these directions come from? Primarily the information required to write the student directions is found in the performance component and the conditions component of the matching performance objective. And sometimes the instructor must add other management-type directions.

The performance part of the performance objective describes or suggests the performance (or behavior) which you are requiring of the learner. The simplest way to view the performance statement is as a good old fifth grade action verb. If the objective called for the learner to write, you specify "write" in the ORT. If the objective calls for recitation, you specify "recite" in the ORT.

Condition statements describe the relevant and significant conditions which will affect learner performance. These conditions may include a description of what will be given to the learner, or perhaps withheld. The conditions may also describe a problem which will confront the learner. Whatever is described, however, is both relevant and significant to the learner as he attempts to prove that he has achieved learning.

Let's look again at the test directions shown before and the matching performance objectives for these items.

Directions to the Student	Performance Objectives (Condition and Performance Components Only)
1. List the original 13 states.	1. The student will identify the original 13 states.
2. On the repair table at the front of the class you will find a small electrical appliance with a malfunction. Locate the malfunction and repair or replace those parts necessary to return the appliance to normal operation.	2. Given a small electrical appliance with a malfunction, the student will repair the appliance.
3. You will solve the riddles below by putting the name on the line after the riddle. Then cut out the pictures and paste them beside the correct riddle.	3. Given a description of selected resource materials, the learner will identify the resources.

Discussion of Example #1

Notice that the first performance objective does not have explicit conditions stated. Is this a bad performance objective? No! The conditions are implied - without the use of reference materials. For many of the simpler tasks the objectives are written in this manner. (However, all objectives must have stated criteria.)

Also, the behavioral verb "identify" has been translated into the test direction, "list." This is appropriate since listing is a way of identifying.

Discussion of Example #2

This particular example shows how management directions must be included in the "Directions to the Students." In all cases the process is not as simple as rewording the performance objective. These management directions are based upon the conditions statement, but involve an expansion so that the conditions can be operationalized.

Also, the performance component of the performance objective (i.e."repair") has been expanded to clarify (i.e. repair or replace) the actual task for the students. This expansion has also split the behavior into its component steps (i.e. locate and repair). These directions all stem from the performance objective.

Discussion of Example #3

Here we have a little different situation. The conditions component in the performance objective is general ("Given a description of selected resource materials"). The test item, however, talks about riddles. Is this legitimate? Sure, the riddles are actually descriptions of the resources. (You see one later.) This is a technique used to make the ORT interesting for the children who will be working with it.

The performance directions are also expanded as in Example #2. "Identify" has been matched in two ways - 1) writing the name on a line, and 2) putting a picture next to the riddle.

Student Response

This is the second major component of an objective-referenced test item. And this is usually the simplest to construct. Let's follow our three examples through and see the student response spaces. The directions are repeated below to show the continuity.

1. List the 13 original states.

Student Response

1. _____ 4. _____

2. _____ 5. _____

3. _____ 6. _____

Student Response

7. _____ 11. _____

8. _____ 12. _____

9. _____ 13. _____

10. _____

2. On the repair table at the front of the class you will find a small electrical appliance with a malfunction. Locate the malfunction and repair or replace those parts necessary to return the appliance to normal operation.

   (There is no student response space for this item because the students will be demonstrating their skills.)

3. You will solve the riddles below by putting the name on the line after the riddle. Then cut out the pictures and paste them beside the correct riddle.

Student Response

I can spell,
say words,
and tell you
the definition;
What am I?

_____

These student response components are pretty straightforward. The only apparent deviation is that Example #2 doesn't have a student response space. And this will happen in all cases where the directions call for an actual student performance; for example, the student makes something, or demonstrates something. So a student response sheet doesn't make sense.

Directions to the Evaluator and Evaluator's Response Space

These are the last two components of an ORT. They will be discussed together because they are so closely related. Both of

these components stem from the criteria component of the performance objective. Basically this is the spot in which the teacher evaluates the students' responses and decides if the student performances are acceptable. These two components vary greatly in complexity depending upon the level of satisfaction of the performance objective.

Examples #1 & 3 would have rather simple "Directions to the Evaluator." In both cases, the original states and the riddles, these directions are simply answer sheets. The "Evaluator's Response Space" for these examples are shown below. In addition the entire performance objective is listed with the criteria component underlined. This is the part of the performance objective which controls the evaluator's response statement.

Evaluator's Response	Performance Objective
1. All 13 states must be correct. ____Pass ____No Pass	1. The student will identify the 13 original states <u>with 100% accuracy</u>.
2. 4 of the 5 riddles must be correctly named and identified with a picture. ____Pass ____No Pass	2. Given a description of selected resource materials, the learner will identify the resources <u>with 80% accuracy</u>.

These are the easy examples. Now let's analyze a performance situation which is always more complex. This ORT relates to this performance objective:

> Given a small electrical appliance with a malfunction, the student will repair the appliance <u>so that it functions normally</u>.

Remember the directions previously given. Now here is a way the last two parts of the test item is written.

Directions to the Evaluator

Examine the repaired small appliance and answer the following questions:

	YES	NO
1. Does the appliance work normally?	___	___
2. Are the component parts correctly assembled?	___	___
3. Is the soldering done correctly?	___	___
4. Are fasteners put on correctly and tightened?	___	___
5. When checking the repaired appliance with a multimeter, are the following values within manufacturer specifications?		
a. resistance	___	___
b. amperage	___	___
c. voltage	___	___

Evaluator's Response

All "yes's" must be checked to achieve this objective.

_____ Pass _____ No Pass

Comments:

Obviously, this is more difficult to construct than an answer sheet. But the performance objective is written at a higher level than simple recall. And this is the aim of most competency-based education programs. But let's see how what seemed to be a simple performance objective turned into a more complex test item.

The performance objective criteria states that the appliance must "function normally." This is a summary of the criteria. In order to see if this criteria is met, one must answer a series of questions. These questions, or check-list, become the essence of the "Directions to the Evaluator." And the "Evaluator's Response" is actually a summary of the evaluation to determine if the performance objective was, in fact, achieved. Often, a "comments" section is added here to allow the evaluator room to make additional observations about the student response.

Summary

There are four general components of an ORT:

1. Directions to the Student
2. Student Response
3. Directions to the Evaluator
4. Evaluator's Response

These sections can take many forms, depending upon the nature of the matching performance objective and the level of the students. The following test item is one complete example of an ORT. Note that there is no student response space in this

example since the response is a speech.

Performance Objective

Given an outline on speaking with notes and a specific topic, the student will speak for two minutes with a single notecard containing notes.

You must choose a specific topic from the list provided below. Construct a two minute speech and arrange your notes according to the outline provided. You will be evaluated upon the specifications listed on the preceding page. You must score 6 out of 7 for a passing grade.

TOPICS

1. hobbies
2. movies
3. favorite musician
4. sports
5. T.V. program
6. an unusual experience
7. my ideal summer

Evaluation

Check either yes or no for each one of the questions below. When you are finished, tally the score. If there are six or more, check "pass." If less than six, check "no pass."

	YES	NO
1. Did the student follow the outline on note-taking?	___	___
2. Were notes confined to one notecard?	___	___
3. Did the student converse with the audience?	___	___
4. Did the student choose a topic from the provided list?	___	___
5. Was the topic presented interestingly?	___	___
6. Did the student read his notes?	___	___
7. Did the student display eye contact?	___	___

Score _____

Pass _____ No Pass _____

Response Sheet for Enabling Objective #3

Below you will find four performance objectives with matching ORT's. Analyze this data and correct the test item by either completing or revising the test item. Write your answers on another piece of paper.

1. Performance Objective #1

Given a list of selected inventors, the student will correctly match them with the appropriate inventions.

ORT #1

Directions to the student:

Match the name of the inventor with the invention by writing the invention letter in the space provided.

____ 1.	John Guttenberg	a. telephone
____ 2.	Samuel Morse	b. phonograph
____ 3.	Alexander Graham Bell	c. automobile
____ 4.	Guglielmo Marconi	d. printing press
____ 5.	Thomas Edison	e. wireless telegraph
		f. radio

2. Performance Objective #2

Given necessary equipment, the student will perform riveting with 70% completed according to FAA standards.

ORT #2

Given a rivet and a series of alloys, the student will select the correct material and complete the rivet length required for metal thickness, compute the finished dimensions of a correctly-driven rivet and compute the minimum rivet spacing and edge distance. The student will then drill the hole and fasten 10 rivets based upon his computations. 7 of the 10 rivets will meet the computed dimensions and have heads and tails free of defects.

3. Performance Objective #3

The learner will correctly associate picture clues with selected words.

ORT #3

Directions (give orally):

1. Name the picture
2. Match the picture with the right word
3. Draw a line from the picture to the right words

____ P ____ NP

4. Performance Objective #4

Given a selected item, the student will prepare a full page advertisement, using the six major parts of an ad, and following the guidelines provided.

ORT #4

Directions to Student:

Using the following information, construct a full page ad on the paper provided. Be sure to include the following parts: Headline, Border, Copy, Illustration, Logotype, and White Space. Check spelling and grammar. You may use a cut-out for the illustration. Time: 1 Hour.

Handout to Student:

Product 10-speed bike - Price $79.99 - Variety of colors - Purchased at Harry's Bike Shop - Location: 17991 Livernois - Guarantee - All extras.

Directions to the Evaluator:

Judging the ad, use the following checklist:

	YES	NO
1. Copy clear and concise	___	___
2. Complete description of product	___	___
3. Illustration appropriate	___	___
4. Proper placement of ad	___	___
5. Shows originality	___	___
6. Grammatically correct	___	___
7. Saleability of ad	___	___

Now turn the page to the Feedback section and check your answers.

Feedback

1. ORT Analysis

This item is missing two components - Directions to the Evaluator and Evaluator's Response Space

ORT Correction

The following (or an equivalent) should be added to the item:

Directions to the Evaluator:

Check to see if the following answers are provided:

d 1.

e 2.

a 3.

f 4.

b 5.

All five must be correct to pass.

_____ Pass _____ No Pass

2. ORT Analysis

The format is incorrect.

ORT Correction

Directions to the Student:

You should have the following materials in front of you:

a. a rivet head, and
b. 3 different types of alloys

If you are missing something, see your instructor.

First, make the following computations:

a. determine the finished dimensions of a correctly-driven rivet.
b. determine the minimum rivet spacing
c. determine the minimum edge distance

Write your answers in the space provided. Next, actually install the rivets based upon your computations.

Student Response

1. I have chosen this alloy: _____.

2. The finished dimensions of a correctly-driven rivet are: _____.

3. The minimum rivet spacing is _____.

4. The minimum edge distance is _____.

Directions to the Evaluator:

Evaluate both the computations and the final product based upon the guidelines below:

	YES	NO
1. Are the computations correct?		
(a) finished dimensions?	___	___
(b) rivet spacing?	___	___
(c) edge distance?	___	___
2. Do 70% of the installed rivets meet the above dimensions?	___	___
(a) How many rivets are there? _____		
(b) How many are correct? _____		
3. Are 70% of the installed rivets free of defects in the heads and tails?	___	___
How many are correct? _____		

Comments:

All "yes's" must be checked to pass. _____ Pass _____ No Pass

3. ORT Analysis: This item is correct.

An answer sheet technically could be provided, but the answers are so obvious it hardly seems necessary.

4. ORT Analysis: "Directions to the Student" do not match the intent of the performance objective. There are additional criteria included in these directions - spelling, grammar, and time. Also there is no Evaluator Response Space and the Checklist does not include reference to the 6 parts of an ad being included.

ORT Correction: Delete the reference to spelling, grammar, and time. OR change the performance objective.

Add to "Directions to the Evaluator":

	YES	NO
8. Were the six components included?		
a. headline	___	___
b. border	___	___
c. copy	___	___
d. illustration	___	___
e. logotype	___	___
f. white space	___	___

All items must be checked "yes" to pass.

Pass _____ No Pass _____

Constructing an ORT

Enabling Objective #4

Given class characteristics and a performance objective, you will construct an ORT which meets the criteria specified in Terminal Performance Objective #1.

You have now learned the components of an ORT and practiced constructing these parts in a variety of situations. You should be ready to make an entire test item. But before you do this there is one more point to consider about these test items - making them understandable to your students.

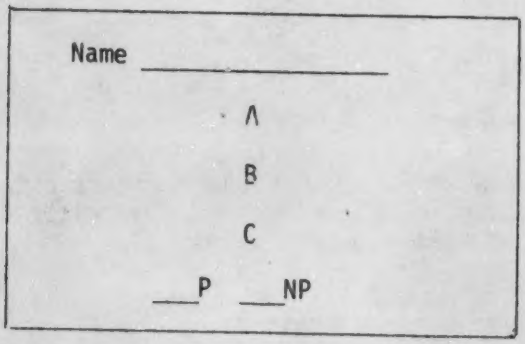
This module has described a test item format which may be different from what your students have seen before. Also the format has been described without consideration of the types of students who will be using them. And yet student characteristics must be considered. Some of the critical factors include:

(a) Age
(b) Students' reading level
(c) Students' experience with the type of task they are asked to do
(d) Students' vocabulary level

Let's take an obvious example--teaching beginning reading to kindergarten students. Obviously modifications must be made in the format. Look at the example below:

Read the following directions orally to the children. Pause after each direction and allow time for all to finish:

(1) Circle letter A
(2) Draw a line through letter C
(3) Draw a box around letter B



The "directions to the students" is actually a script for the teacher. And these directions have been carefully worded in the students' language. Note that the word "box" is used rather than "square." But the students evidently do know the meaning of "circle." Even an apparently simple little ORT such as this has involved many decisions based upon the teacher's knowledge of the students in the class.

But let's look at another example of a consumer education test item designed for ninth graders. Below you will find two versions of the same test item*. The first was written keeping in mind only the four components and the performance objective. The second version was written after actual tryout and careful consideration of student characteristics.

*These test items are from Project PACT (Pupil Achievement and Consumer Teaching). This project involves the development of a interdisciplinary CBE consumer education program for high school students.

ORT Version #1

Name: _____ Score: _____

DIRECTIONS: Read this section before you answer the two questions below. You are going to buy a stereo, and it will cost $475. You will have to buy it on credit. Give your answers in the following spaces provided.

QUESTION I: What are five questions you will want to ask the lender when you are trying to buy something on credit?

Sample Answer: How much is the down payment?

1. _____
_____
_____

2. _____
_____
_____

3. _____
_____
_____

4. _____
_____
_____

5. _____
_____
_____

QUESTION II: What are five things the lender will want to know about you before giving you credit?

Sample Answer: Is there a co-signer?

6. _____
_____
_____

7. _____
_____
_____

8. _____
_____
_____

9. _____
_____
_____

10. _____
_____
_____

Scoring Guide

I. Did the student list five questions that the borrower would want to ask the lender?

Examples:

1. What is the "true" interest rate?
2. How long will it take to pay back the loan?
3. How much is the down payment?
4. What will the penalty be if payment is late?
5. Could I make two payments at one time?
6. Must I remain in this state until the loan is paid?
7. Do I have to have a co-signer?
8. Is there a penalty for paying off the loan before the due date?

Check each correct answer. A maximum of 5 correct answers are acceptable for this section. A total perfect score of 50%.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

II. Did the student list five things the lender would want to know before giving credit?

Examples:

1. Credit rating
2. Income
3. Co-signer, if any
4. Age
5. Length of time in residence
6. Savings
7. Other outstanding debt

Check each correct answer. A maximum of 5 correct answers are acceptable for this section. A total perfect score of 50%.

8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____

Total possible score = 100%
Each item = 10%
Passing score = 100%

ORT Version #2

Name _____ Score _____

FIRST

READ THIS

PROBLEM: You are going to buy a stereo. You've found one that costs $475, so you'll have to buy it on credit.

SECOND

NOW READ AND THINK ABOUT THIS QUESTION

What questions should you ask the seller when you are trying to buy something on credit?

EXAMPLE: How much is the downpayment?

THIRD

NOW WRITE AT LEAST FIVE QUESTIONS YOU WILL WANT TO ASK THE LENDER WHEN YOU ARE TRYING TO BUY SOMETHING ON CREDIT.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

FOURTH

NOW READ AND THINK ABOUT THIS QUESTION

What are five things the lender will want to know about you before giving you credit?

EXAMPLE: Is there a co-signer?

FIFTH

NOW WRITE AT LEAST FIVE THINGS THE LENDER WILL WANT TO KNOW ABOUT YOU BEFORE GIVING YOU CREDIT

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

NOTE: Scoring Guide will remain the same.

Many changes were made in this ORT even though both items test the same performance objective and both items have all four of the required components.

Go back and examine the following changes:

1. Deletion of objective statement

   The first version included the performance objective statement. It seemed like a good idea but confused the students. They'd never seen a test start off like that before and read the objective as the "directions to the students."

2. Lowering the reading level

   Too many students had trouble reading the ORT. So only essential information was included; sentences were made shorter; some vocabulary was changed.

3. Steps in the Directions were emphasized

   Multiple directions proved difficult. Therefore, the directions were divided into stages, and the little pictures were added to help the student correctly follow directions.

Note that there were no changes in the "Directions to the Evaluator." Typically the only parts to consider are "Directions to the Students" and " Student Response."

Many changes in an ORT may need to be made after tryout. However, teachers should anticipate the problem of their students, and not construct the test item for the brightest student who will probably go on to fame and success.

Now let's try writing a complete ORT. Keep in mind the four major components:

1. Directions to the Student
2. Student Response
3. Directions to the Evaluator
4. Evaluator Response

Also, write your item for the type of students described.

But, ultimately your ORT must test the intent of the given performance objective. Turn to the next page for the Response Sheet for Enabling Objective #4.

Response Sheet for Enabling Objective #4

Read the following student characteristics and the performance objective. Then construct an objective-referenced test item to match the objective which would be appropriate for these students. Write your answers on another piece of paper.

Student Characteristics

14-year old students in a ninth grade general math course
reading level ranges from grades 6-10
many do not have a large vocabulary
students have had practice following directions on their own

Performance Objective

Given a blank check and information needed to fill out the check, the student will write out the check according to the guidelines supplied in class.

Now turn the page to the Feedback section and check your answer.

Feedback

Use the following guidelines to check your ORT.

CRITERIA	YES	NO	NA
Format: Does the item include:			
1. Directions to the Students?	___	___	___
2. Student Response Space?	___	___	___
3. Directions to the Evaluator?	___	___	___
4. Evaluator Response Sheet?	___	___	___
5. Do the "Directions to the Students" accurately reflect the intent of the performance objective?	___	___	___
6. Do the "Directions to the Evaluator" accurately reflect the intent of the performance objective?	___	___	___
7. Is the test item written in a manner appropriate for the types of students in the class?	___	___	___

If you had no errors, move on to the next section of the module.

If you missed any of the above answers, go back and read this section of the module again.

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Constructing Test Items in Your Area

Terminal Performance Objective #1

Given five terminal performance objectives for a course (or grade level) in your area of specialization, you will write an objective-referenced test (ORT) item for each. Each ORT will contain the following components:

(a) Directions to the Student
(b) Student Response
(c) Directions to the Evaluator
(d) Evaluator Response

In addition, each test item must:

(a) test the intent of the matching performance objective
(b) be worded to facilitate student comprehension

Response Sheet for Terminal Performance Objective #1

Now is the time for you to construct some ORT's for a class you teach. Go back to the set of approved performance objectives written for a class in Module #2 - Performance Objectives. Select five of these objectives. Make sure at least some of these (if not all) are performance items which require your students to either make a product or actually demonstrate a skill.

On a separate sheet of paper, write each of these five selected performance objectives and your matching objective-referenced test item below each. Also, include the pertinent class characteristics--course, grade level of students, ability level of students, and other relevant information.

Now turn the page to the Feedback section and check your response.

Feedback

Each of the ORT's will be evaluated according to the following criteria:

CRITERIA	1	2	3	4	5
Format: Does the item include:					
1. Directions to the Students?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
2. Student Response Space?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
3. Directions to the Evaluator?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
4. Evaluator Response Sheet?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
5. Do the "Directions to the Students" accurately reflect the intent of the performance objective?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
6. Do the "Directions to the Evaluator" accurately reflect the intent of the performance objective?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA
7. Is the test item written in a manner appropriate for the types of students in the class?	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA	__YES __ NO __ NA

If you had no errors, move on to the next section of the module.

If you missed any of the above answers, go back and read this section of the module again.

Assigning Letter Grades

Terminal Performance Objective #2

Given a CBE design for a course or grade level in your area of specialization, you will describe a grading system which:

(a) is compatible with the constraints of your school setting, and
(b) reflects the basic principles of CBE.

Letter grades are a byproduct of an educational system. Unfortunately for many people -- students, parents, and teachers included, letter grades have become a goal unto themselves. Byproduct or goal - grading will be around for many of us for quite awhile.

Evaluating learner performance with objective-referenced tests is sufficient without assigning letter grades. A learner either has or has not achieved an objective. That fact is important and should not be concealed in a letter grade. But there is tradition; there is policy; there are expectations of parents and students. How do we cope with letter grades in a competency-based program? That's what this part of the module is all about.

Several grading schemes can tie grades to the achievement of performance objectives. Four of these grading systems (there are many more) are described below. In each case, the grading system is tied to performance and could be objectively, externally verified.

System 1: Pass/No Pass

Performance objectives are accumulated. When the learners pass that point, they are given credit for the course. This system does not produce an A-B-C-D grading structure.

Example: PO 1 / PO 2 / PO 3 / PO 4 / PO 5 / Pass

System 2: Pass-Fail With Grades

This is essentially the same system as #1 except grades are assigned. Pass can become an "A" and fail become an "E." Or, a variation of this is an A,B,E system in which students passing all performance objectives for a course get a "B." For an "A" grade extra enrichment objectives must be written and passed.

System 3: Levels within Performance Objectives

This system grades each performance objective by levels. Each performance objective, to the extent possible, has an "A" level of performance, "B" level, and a "C" level. These levels of performance are reflected by 3 sets of criteria for each performance objective. When reporting time comes, these individual grades are averaged, the mode is identified, or some other system is used to determine an accumulative grade.

System 4: Formative/Summative Grading

In this case, you use all report card grades except the final, accumulative grade to report progress (formative evaluation). One would have to identify in advance the basis for these formative grades. The final course grade is then used only to report the status of the student at the end of the learning experience (summative evaluation). No averaging of grades from the report card is done. This final grade then indicates if all objectives were completed or not and would be assigned according to either System 2 or 3 above.

In all of the above cases the grading systems have some common underlying principles. These include:

1. The grading system is public and specified in advance.
2. The grading system is based upon completion of all performance objectives for a course.
3. Completion of a performance objective is determined by student response to objective-referenced test items.

These principles can be applied in a variety of ways which meet the constraints of different school situations and curriculum areas.

One last point should be made - grades should be distinct from rules of your class or your school. There may be rules governing attendance, punctuality, etc. These should not affect a letter grade which relates to the performance objectives, if at all possible. If they must, as dictated by school

policy, then this must be clearly specified in advance with clear rules showing how they affect grades. The best approach, however, is to have class rules and enforce them but not let those interfere with how you implement your CBE program.

Response Sheet for Terminal Performance Objective #2

On another piece of paper write a handout appropriate for distribution to your class which describes how grades will be assigned. Make clear exactly:

a. what grades can be given (for example, can you give "incompletes")
b. the basis of getting each grade
c. school rules, if any, which are influencing your grading plan
d. provisions, if any, for "making up a grade."

Turn the page to the Feedback section and check your answers.

Feedback for Terminal Performance Objective #2

Use the following guidelines to check your paper explaining grading systems.

Does your explanation include:

	YES	NO	NA
1. Which grades you will be assigning to students?	___	___	___
2. The basis for each grade?	___	___	___
3. The relationship between the grades and the performance objectives?	___	___	___
4. The relationship between the grades and the objective-referenced test items?	___	___	___
5. Provisions, if any, for "making up a grade"?	___	___	___
6. The relationship, if any, between the grades and any school rules?	___	___	___

Comments:

All "YES'S or "NOT APPLICABLES" must be checked.

VII. EXIT TEST

The Exit Test is administered to assess achievement. Are you ready for the final evaluation? Do you have any questions? If so, see your instructor or an expert in your school district for help. If not, go on to the Exit Test.

THE TEST

The Exit Test for this module is to show successful completion of the response sheets for the terminal performance objectives. Therefore, turn in the response sheets for Terminal Performance Objectives 1 and 2 to your instructor. These activities encompass all of the learning in this module.

GLOSSARY - MODULE #3

Exemption Test: A test, usually given prior to instruction, which allows a learner to exempt himself/herself from the instruction if completed successfully. Is similar or identical to Exit Test.

Exit Test: A test, usually given after instruction is complete, which allows the learner to exit a given learning experience if completed successfully. Is similar or identical to Exemption Test. (Also see Post-test.)

Formative Evaluation: Process of testing and evaluating a learner's progress toward the achievement of a performance objective.

Needs Assessment: A process for determining a student's needs for learning.

Norm-Referenced Testing: Process of testing and evaluating an individual learner's performance by comparing it to the performance of the group (norms).

Objective-Referenced Testing (ORT): Measuring learner performance in a way described in a performance objective and evaluating the learner against criteria in the objective.

Pre-Test: A test given prior to a learner experience which measures the student's need for instruction and his prerequisite skills necessary for success.

Prerequisite Skills Test: A test, often part of a pre-test, which measures those assumed skills upon which the instruction is based.

Post-Test: Essentially the same as Exit Test; a test given after instruction.

Summative Evaluation: Process of testing and evaluating a learner to determine whether he/she has achieved the learning (performance) specified in a performance objective.

COMMUNITY COLLEGE APPLICATION

OBJECTIVE-REFERENCED TESTS

Before you read Module #3, read this and think of your community college situation . . .

Before you begin this part of your CBE program design, you need to be committed to the following concepts:

1. It is appropriate for vocational teachers to teach to the test.
2. It is appropriate for vocational students to see the test before instruction.
3. It is appropriate if a class's final grades are mostly high "A's" and "B's".

To many, these are startling approaches to teaching. These principles are directly opposite of the techniques used when most of us went to school. Some say these kinds of methods are just those advocated by theoretical schools of education which are not really in tune with the real world. Or perhaps, one could employ these tactics in elementary school, but they certainly are "too soft" to use when you are teaching vocational subjects at the college level.

Let's analyze these three assumptions. First, it is appropriate for vocational teachers to teach to the test. In CBE programs, it is imperative that students know exactly what is to be learned prior to instruction. The most specific way in which a community college teacher can describe what the students should be able to do after the course is to present the test, or the final exam. In competency-based education programs, this should mean little more than teaching to the pre-specified performance objectives.

Putting it this way does not seem bad, because the test must, in fact, cover all of the content in the course. In other types of testing techniques, the test represents just a sample of the material which is expected the students have learned. Therefore, in these situations, teaching only to the test would be a way to "water down" the course. This is surely not the case in CBE classes.

If one follows this thinking, it is then logical for vocational students to be able to see the test before instruction. Another way some occupational education teachers have implemented this concept is by not only showing their students the test, but by providing a model of the desired answers. This model may be a product like the one developed, or it may be a demonstration of a process. In this light, showing the students the test may not appear so unusual. Of course, it should be emphasized that in CBE programs the tests are rarely all objective, multiple-choice or true-false types. The intent is not to have students merely memorize facts. Instead the objective-referenced tests for a set of terminal performance objectives should be primarily application tasks, a demonstration of skill, of the use of knowledge.

Finally, in CBE programs it would be typical for the final student grades to be skewed to the high side -- mostly "A's" and "B's". The goal as a teacher is for students to meet the objectives of the course. Students must pass each objective, or they recycle until the objectives are passed. If a student finishes a course at all, the grade will probably be high; the

alternative is a failure, or an incomplete.

These three concepts are implications of following the process which will be explained in this module. As you learn the mechanics of writing objective-referenced test items, think ahead to the way in which you will be using them in your community college vocational classroom.

After you read Module #3, read this and consider applications to community college programs . . .

At this point in the module you should have devised a grading system and written test items which match performance objectives for a class in your area of specialization. This part of the community college application section will help you identify any errors which you may have made. You can correct these mistakes by reading the:

1. an analysis of selected community college objective-referenced test items showing the typical errors, and
2. model test items from a few community college courses
3. discussion of grading considerations in community colleges.

The most common problem that people have when writing ORT's (objective-referenced tests) is that the primary rule is not followed:

THE TEST ITEM MUST

MATCH THE PERFORMANCE OBJECTIVE.

This is the most important part of test construction. Below you will find two different examples from very different types of occupational education situations. In each example there is the

performance objective and the Directions to the Student part of the test item. Look for the discrepency between the test item and the performance objective.

Example #1

Performance Objective: Given an emery board, the learner will demonstrate the correct method for filing fingernails.

Direction to the Student/and Student Response Space:

Draw a circle around the letter that indicates the correct manner of filing fingernails:

A. corner to corner
B. straight across
C. center to corner
D. corner to center

Example #2

Performance Objective: Given copy to be duplicated, the student will follow all prescribed steps for producing legible copy while typing or handwriting the materials on a master or stencil.

Directions to the Student/and Student Response Space:

As you type the attached copy on a master. list the six sequential steps which you are following for producing legible copies. (Time: 15 minutes)

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

Notice that in Example #1 the cosmetology performance objective calls for the student to demonstrate while the test item calls for a knowledge of the process. The behaviors do not match.

In Example #2 the clerk-typist objective also calls for a demonstration. The test item, however, calls for a desription of the process. Again, the two behaviors are not congruent. The be-

havior in the test item MUST be the SAME as the behavior in the performance objective.

The second rule to keep in mind as the test items are being written is:

DO NOT INCLUDE ANY EXTRANEOUS DIRECTIONS IN THE TEST ITEMS.

Let's review an example of how this rule has not been followed. In a community college health occupation course, there is this test item:

> Directions to the Student:
>
> In the space provided list four of the six arteries where the pulse can be taken in the way described in the Nurse's Aide Manual.

Assume that the performance required is the same as the one in the objective, the student must identify arteries where the pulse can be taken. But the rest of the directions "in the way described in the Nurse's Aide Manual" are unnecessary. This is the criteria for how the pulse is taken, and that has nothing to do with the item. The only possible contribution of this is to confuse the student, and items should hardly be written with this goal in mind. Directions (to both students and evaluators) should be clear, to the point, and simple.

The next rule that will be considered here is:

WRITE THE TEST ITEM SO THAT THE RESULTING PERFORMANCES AND EVALUATIONS WILL BE MANAGEABLE UNDER THE CONDITIONS OF THE NORMAL CLASSROOM.

Consider this situation from an auto mechanics course. The student is asked to select a tire and the correct size rim and by using a tire mounting machine mount the tire on the rim, fill it with air to the pressure indicated on the tire. However, the next

part of the test item is:

Directions to the Evaluator:

Test the tire after one hour or more to see if the the pressure is still within a tolerance of 2 lbs.

This is certainly a logical way of evaluating the performance, and perhaps it is the only way. But as test items are written, if all of the student performance call for an evaluation by inspection by the one instructor, is an unmanageable situation being created? Can the instructor actually handle all of this work within the time available? Sometimes other testing procedures must be devised to be realistic. In classes with a great deal of actual demonstration of skill, the instructor must keep the management of this testing in mind as the item is being written.

Finally, the last rule:

DISTINGUISH BETWEEN TEST ITEMS AND CLASS RULES.

In many vocational teaching situations there are many rules which must be followed for an orderly class. This is especially true in a laboratory situation. However, a teacher can, enforce these rules without writing actual test items for each one. Consider the following example from an automotive program.

Directions to the Student:

Check the tools at the beginning and the end of the session with the tool check list and maintain a legible written record of tools issued. There should be minimum confusion, and no loss of tools.

This is certainly an important thing to do during each class session, but it is questionable whether this is new content to be learned, or is it simply a rule of the class. Make this distinction when you write performance objectives and test items.

The last general area of discussion is that of grading within the community college vocational education classroom. Grades are usually necessary. However, the obligation of the vocational teacher in a CBE program is to see that all students meet each objective. Therefore, some grades are not meaningful. An "E" naturally means that the objectives were not passed. But what does a "D" mean? It's doubtful if this grade can logically appear. The general procedure is for the teacher to decide in advance of instruction what grade is warranted if all of the objectives are met. Often, this grade will be a "B" or a "C", and then enrichment of advanced work is specified for students to complete who want a higher grade. While this is not the only procedure which can be followed, it is common. Many teachers often use a Pass-Fail grading system, but here the local school regulations must be considered. Many community colleges have found that the Pass-Fail approach does not cause problems with the transfer of credit, as long as there is documentation to support what a "Pass" actually stands for.

This additional discussion and analysis should help you perfect your test items, as well as your description of an appropriate grading system. If any questions have been raised, either reread the related section in the module (also analyzing the examples there) or talk to a colleague. A further source of aid is the following complete test items from community college vocational courses. Even though you may not be familiar with the content area, analyze the format and the approaches to testing shown. When you are confident that you have mastered the techniques of writing objective-referenced test items, complete the final examination for Module #3.

TPO: Given the handout on mailable copy and the rules for arranging outlines, the learner will type a mailable outline.

Directions to the Student:

Type the following outline on a full sheet of paper using a 50-space line and a 2-inch top margin. Erase and correct all errors.

Plan For Building School Spirit

I. Have more pep rallies.

A. Have a pep assembly one period every week.
B. Have a short pep rally before every game.

II. Have a cheering section.

A. Reserve it for juniors and seniors.
B. Each class wears its color sweater.

III. Have a contest.

A. Goal is to get a new school cheer.
1. Each class may turn in two cheers.
2. Contest is to end in two weeks.
B. Prize will be a pass for all home games next season.

Directions to the Evaluator:

Mailable copy must be free of any of the following types of errors. Check the product for these errors.

	OK	Errors	Not Applicable
1. Hole in paper (erasing)	____	_____	____
2. Hole in paper (tension setting is too high on electric typewriter.	____	_____	____
3. Poor erasures (part of a letter is missing; using a dirty eraser and leaving smudges; portion of erased letter can still be seen, etc.	____	_____	____
4. Smudges (fingerprints, etc.) on original or on copies to be mailed.	____	_____	____

	OK	Errors	Not Applicable
5. Strikeovers	____	_____	____
6. Misspelled words	____	_____	____
7. Failure to type numbers or symbols properly	____	_____	____
8. Uncorrected typographical error	____	_____	____
9. Raised capital letter (if part of the capitalized letter cannot be seen)	____	_____	____
10. Typing too light (letter cannot be seen)	____	_____	____
11. Each added word (if meaning is altered)	____	_____	____
12. Each omitted word (if meaning is altered)	____	_____	____
13. Incorrect word division	____	_____	____
14. Poor balance (side margins are not approximately equal; material is vertically unbalanced	____	_____	____
15. Failure to space correctly as specified in typing class with space bar ot carriage return (between lines, paragraphs, etc.)	____	_____	____
16. Incorrect variations in letter style and punctuation style	____	_____	____
17. Failure to follow directions	____	_____	____
18. Insufficient carbon copies	____	_____	____

Comments:

Is the objective passed? _____yes _____no